



90 EFFECTIVE DAYS OF INTERVENTION PROGRAM IN BUDHA DAL PUBLIC SCHOOL, PATIALA: PART ANALYSIS OF THE WORLD COGNITION PROJECT INITIATED BY CENTRE FOR RESEARCH IN APPLIED COGNITIVE SCIENCES

Shruti Marwaha

Research Scholar, Research and Development Deptt, Centre for Research in Applied Cognitive Sciences.

ABSTRACT

The present research study intended to evaluate the cognitive abilities particularly Intelligence Quotient, Focus Factor, Decision making ability and Creative Quotient of an esteemed educational institute, Budha Dal Public School, Patiala. Detailed study was conducted on a sample of 98 (initial sample 99) students of the school. At initial stage, Test-1 was conducted on a sample of 99 subjects which was followed by provision of 90 days of customized training in three sessions of a month each. Later, Tracker test (Test-2) was conducted (students appeared-98) on subjects and finally the data were analyzed. The results indicated significant up-swing in IQ, FF, DMA and CQ of the participants.

KEYWORDS: Budha Dal Public School, Cognitive Development, Quarterly Tracking.

1. INTRODUCTION:

Budha Dal Public School, Patiala is the gift of Chief of Budha Dal, '96 Crori Singh Sahib Jathedar Baba Santa Singh Ji, Akali Budha Dal Panjwan Takhat. The school is run by the Shiromani Budha Dal Sikh Educational Society. The school's foundation was laid on May 06, 1984. It aims to provide the youth with an opportunity to get an all round education based on an adaptation of the English public school system on Patiala's tradition-enriched soil. The aim of the school is to make its pupils cultured and useful members of society. They should, when they enter the world, be able to take an active interest in the betterment of the community and when they grow up to take their respective positions in life, having the advantage of a sound education, fit themselves usefully into the world of tomorrow.

Education has been taken up as a major tool for human development. Education makes humans equipped with knowledge, information and life skills. It goes without saying that education is imparted in all educational institutes by trained teachers, professionals and experts of the field. However, it is evident that even though all the students in the same classroom are taught by the same teachers in a same manner using the same tools and techniques, still the results vary. Teachers who use learning styles and multiple intelligences in their classrooms wonder how important it is for students to know about these models. Experience has taught us that students who understand the models are better able to understand their own learning profiles, to develop flexibility and adaptability in their thinking, and to set realistic goals about minimizing learning weaknesses and maximizing strengths. In fact, research on the importance of metacognitive thinking supports the notion that instructional approaches that help students reflect on their own learning processes are highly beneficial to their overall learning and tend to stimulate motivation to improve as learners (Brown, 1989; Marzano et al., 1988). When students engage in this kind of "thinking about thinking," they become more self-directed and are able to select appropriate strategies for particular learning situations. In Libertyville, Illinois, where high schoolers take a course in style-based metacognition, course instructor Sue Ulrey explains, "We want students to understand what sorts of learning styles there are and how to interpret their own behavior in learning. This leads to greater self-awareness." (Caccamo, 1998, Section 5, p. 3) Because models of learning can be taught rather easily to children as young as 1st grade (Armstrong, 1994), many teachers teach students about learning style and multiple intelligences so they can better understand themselves as students and as people. Of course, students—and teachers—must understand that styles and intelligences are not simply categories of identification; any description of a learner is an approximation. Both models are useful ways of helping us to understand our own strengths and weaknesses as learners so that we may grow and become more balanced. Gardner's work has influenced the way many teachers approach their classroom instruction. There are many ways to demonstrate understanding and it is important to incorporate these intelligences when planning to ensure inclusion for all students, and for students to receive the best possible learning experience. With an understanding of Gardner's theory of multiple intelligences teachers can promote new possibilities for learning, with greater emphasis on lifelong learning, which support the development of students' skills in creativity and innovation. Different teaching and learning strategies can accommodate students with these different ability levels, including those who do not learn in traditional ways. Empowering students to learn through multiple modalities fosters a collaborative classroom where students are comfortable experimenting and letting others experiment (Borek 2003, p. 24). Multiple intelligences can allow students to safely explore and learn in many ways, and they can help students direct their own learning. By understanding not only that there are different intelligences, but also how to teach to them,

teachers can effectively implement lessons in a way that allows all learners to show what they know, not just those who read and write well. The theory of multiple intelligences does not point to a single, approved educational approach. Gardner, in fact, is wary of making recommendations. He claims that educators are the ones who are "in the best position to determine whether and to what extent MI theory should guide their practice." The concept of multiple intelligences originated as a psychological theory that focused on "individual differences in strengths and modes of representation." As Gardner states, "there is no direct tie between a scientific theory and a set of educational moves." In any case, when a teacher decides to implement the theory of multiple intelligences in everyday classroom life, he must begin by trying to determine the "intelligences" with which different children learn. Powerful ideas have universal impact. The concept of Multiple Intelligences, for example, started as a theory in the halls of Harvard University and has now grown to be one of the most influential movements in teaching practices in the 20th century. Instead of seeing the mind as possessing finite quantities of a substance known as intelligence, Dr. Howard Gardner, the originator of the theory, rephrased the concept of intelligence, defining it as a person's ability to solve problems and create useful products. In doing so, he opened the door for not one but many intelligences, as we have many different ways of solving problems and learning. His work forced people to reevaluate not only the definition of intelligence but also our approach to learning and teaching.

2. METHODOLOGY:

The first step included sample selection and then, rapport was formed with the subjects. The students were tested twice and monitored for 3 months. However, they were under regular observation through the school coordinator and CRACS Team for over 6 months.

2.1 Stages of Study:

At initial stage, Test-1 was conducted. In the second Stage, Intervention Programme customized training Quarter-1, Month-1 (IPCT-Q1M1) was provided to the subjects. In the next Stage, customized training (IPCT-Q1M2) was provided to the subjects, followed by IPCT-Q1M3 that were provided to the subjects. There was monthly monitoring in the process. After 3 months, Tracker test (Test-2) was conducted on subjects. Data were then analysed to make meaningful inferences.



Fig 1: Design of the Research work

2.2 Participants:

Table 1: Details of the participants

Budha Dal Public School, Patiala			
UID	Name	Age (Y)	Grade
172	Sukhnidh Singh	12	7
173	Aashima Jaiswal	13	7
174	Akshvir Singh	12	7

UID	Name	Age (Y)	Grade
175	Arshdeep Singh	13	8
176	Danish Veer Singh	12	6
177	Harvinder Singh	12	6
178	Guransh	11	6
179	Harinderpartap Singh	10	6
180	Pratham	13	-
181	Utkarsh Jain	11	6
182	Raninder Singh	11	6
183	Sahibjot Singh	11	6
184	Manav Sethi	13	7
185	Bikramjeet Singh	13	7
186	Harshpreet Singh	13	8
187	Sahil Cheema	15	8
188	Piyush Singla	12	8
189	Parteek Sarwara	13	8
190	Piyush Mittal	13	8
191	Rashi Gulati	13	8
192	Harshit Nayak	13	7
193	Jatin Preet Singh	13	8
194	Kamalpreet Singh	13	6
195	Puneet Singh	11	6
196	Harkaran Singh	13	8
197	Gursher Singh	11	6
198	Kuljeet Moudgill	12	7
199	Nakul Mittal	12	7
200	Guntas Sodhi	12	7
201	Tanishq Bagga	13	8
202	Manikaran	12	8
203	Gurdit	11	6
204	Jaskaran Singh Sandhu	13	7
205	Arshdeep Singh	13	8
206	Harshul Aggarwal	13	8
207	Gurleen Kaur	14	8
208	Vavanpreet Singh	15	9
209	Surinderpal Singh	14	7
210	Manbir Kang	15	8
211	Manmeet Singh	11	7
212	Anmol Singh	13	8
213	Jashandeep Singh	13	8
214	Khushpreet Singh	14	8
215	Fatehjit Singh	11	7
216	Jasnoor Kaur	13	8
217	Amanjot Kaur	12	6
218	Vardaan Gaur	12	7
219	Pavninder Singh	12	6
220	Manroop Singh	13	8
221	Aviraj Singh	14	8
222	Pawandeep Singh	12	7
223	Sukhekam Singh	12	7
224	Krish Mittal	11	7
225	Karanveer Singh	14	7
226	Karan Virk	13	8
227	Jashanpreet Singh	10	6
228	Ravneet Kaur	13	7
229	Harsiret Singh	12	7
230	Harsimrandeep Singh	13	7
231	Samardeep Singh	13	7

UID	Name	Age (Y)	Grade
232	Harmandeep Kaur	11	6
233	Jasmeen Aulakh	12	7
234	Dilkaran	13	7
236	Tanvir S. Gill	12	7
237	Suprita	10	6
238	Gurshan	12	7
239	Khushpreet Kaur	11	7
240	Arshjeev Kaur	13	7
241	Parneet Kaur	12	7
242	Kuljot Singh	11	6
243	Tej Partap Singh	12	7
244	Jasmine Pannu	11	7
245	Pahulveer	11	6
246	Piyush	13	8
247	Parth	13	8
248	Insaafpreet	13	8
249	Rohit Bhardwaj	12	6
250	Robin Sharma	12	7
251	Abhikaran Singh	12	7
252	Hardik Sharma	12	7
253	Mansimran Kaur	11	6
254	Gurparmaan Singh	12	7
255	Vansh Jot Singh	13	-
256	Amitoj Singh	13	6
257	Sahibpreet Singh Kang	13	8
258	Gursimran Singh	13	8
259	Japmanjot Singh	12	8
260	Avjeet	11	6
261	Bodham Gogiya	12	7
262	Karanjot	12	7
263	Jaiteg Singh	10	5
264	Harman	13	5
265	Japnain Singh	14	9
266	Sehajveer Singh	11	7
267	Arshpreet Singh	12	6
268	Khushant	12	
269	Asket Singh	11	6
270	Harkirat Singh	10	6

3. STATISTICAL ANALYSIS

Once the data was obtained, it was coded, tabulated and analyzed, keeping in mind the objectives of the study. Appropriate statistical tools were used to draw meaningful inferences.

Table 2: Statistical tools used for analysis of data

S. No.	Statistical tools	Formula	Purpose
1.	Mean (x)	$X = \frac{\sum X}{N}$ where, X = Variable N = No. of sample	To find out the average scores of variable used in the study.
2.	Percentage (%)	$\% = \frac{X}{N} \times 100$ where x = Derived score n = total score	To find the distribution of subjects with regard to various variables of the study.
3.	Standard Deviation (S.D.)	$\bar{O} = \sqrt{\frac{\sum x^2}{N}}$ Where X = Deviation from actual mean X = mean. X = variable. N = number of samples.	To find out deviation from the mean scores of the variables.

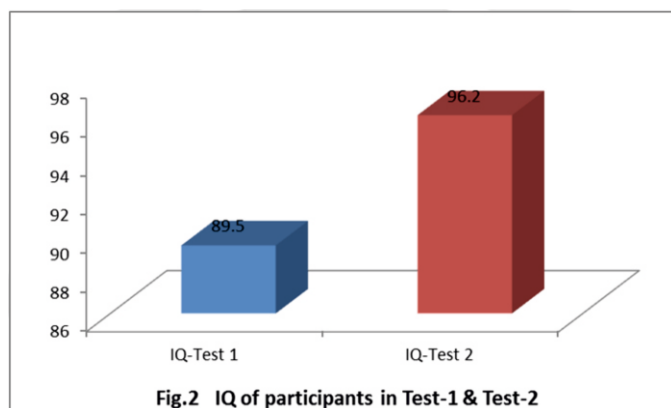
4.	Standard error of mean (S.E)	$S.E = 0/n$ Where $0 = S.D.$ $n = \text{number of observations}$	To find out the degree to which the mean is effected by the error of measurement and sampling.
5.	't' test	$t = (x_1 - x_2) / S$ $\sqrt{n_1 n_2 / n_1 + n_2}$ where $x_1 = \text{mean of 1st sample}$ $x_2 = \text{mean of second sample}$ $S = \text{combine S.D.}$ $n_1 = \text{number of observations in 1st sample.}$ $n_2 = \text{number of observations in 2nd sample}$	To compare the average score of any two groups or to find out whether the mean of the two samples vary significantly from each other.

4. RESULT AND DISCUSSION:

4.1 Statistical Analysis and level of Significance of Intelligence Quotient:

Table 3: Mean Standard deviation, standard error, t-values and level of Significance of IQ of subjects between Test 1 and Test 2

TEST	MEAN	S.D.	S.E.M	t - value	P-value	Lev. of sig.
Test 1	89.5	19.87	0.90	88.6	<0.0001	Extremely Statistically Significant
Test 2	96.2	19.6	0.98			

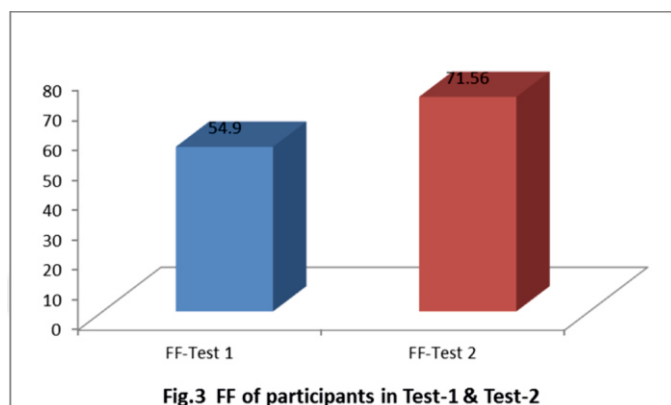


It is witnessed that there was significantly high statistical difference in the mean value of IQ of the subjects as assessed through them test 1 and test 2, the IQ in the latter case being at a much as higher end.

4.2 Statistical Analysis and level of Significance of Focus Factor:

Table 4: Mean, Standard deviation, standard error, t-values and level of Significance of FF of subjects between Test 1 and Test 2

TEST	MEAN	S.D.	S.E.M	t - value	P-value	Lev. of sig.
Test 1	54.9	12.5	0.459	44.6	<0.0001	Extremely Statistically Significant
Test 2	71.56	14.3	0.82			

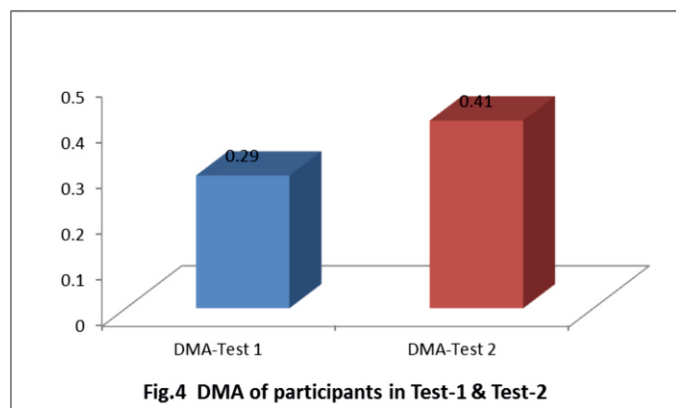


It is notified that the mean value of the Focus Factor as assessed in the test 2 of these subjects was much higher as compared to the tests formerly taken making the statistical difference remarkably high.

4.3 Statistical Analysis and level of Significance of Decision Making Ability:

Table 5: Mean, Standard deviation, standard error, t-values and level of Significance of DMA of subjects between Test 1 and Test 2

TEST	MEAN	S.D.	S.E.M	t - value	P-value	Lev. of sig.
Test 1	0.29	0.15	0.09	20.4703	<0.0001	Extremely Statistically Significant
Test 2	0.41	0.14	0.66			



Moreover it is noticed that there was a drastic difference in the mean value of DMA of the subjects as assessed in test 1 and test 2, the former one bearing no less than a trough.

5. CONCLUSION

In a nutshell, there are certain cognitive ability factors that can be inferred as super sets for complex cognitive functions which can then be reordered by applying customized education methodology. In the contemporaneous research, an extremely significant drift towards higher level of Cognitive Abilities was recorded after the completion of 90 days of customized training solution. It was contemplated that there had been a phenomenal surge IQ, FF and DMA. To wrap up, it can be beheld that Learning process, Cognitive abilities & Personality of the students can recuperate strikingly if they are provided required training as per their learning style.

6. ACKNOWLEDGEMENT

Authors express indebtedness to the Almighty, who is the apostle of strength. Genuine thanks are expressed to all the authors/ researches whose work is referred for making the present study a real success. The researchers are thankful to the Management of the school for granting the permission of conducting research. Immense thanks are expressed to the Principal of esteemed institution who had reportedly facilitated the implementation of the intervention programme with great enthusiasm. Besides, the efforts of coordinator are worth appreciation and acknowledged. Authors are inevitably grateful to all the teachers, students and all those directly as well as indirectly involved in the auspicious research work.

7. REFERENCES:

- Aggarwal, J. C. (2003). Child Development and Process of Learning. Shipra Publications, Shakarpur, Delhi,
- Aggarwal, V.R. (1983) A Study of Reading Ability in Relation to Certain Cognitive and Non-cognitive Factors. Asian Journal of Psychological Education 11, 3, 41-44.
- Bandura, A. (1986). Social foundation of thought and action: A social cognitive theory. Englewood cliffs, NJ: Prentice Hall.
- Blumen.B.J. Meneely & Renhart (2002). Students goal orientation and cognitive engagement in classroom activities. Journal of educational psychology, 80, 514-523.
- Ceci, S.J. (1991). How much does schooling influence general intelligence and it's cognitive components? A reassessment of the evidence: Developmental psychology, 27703 - 722.
- Das, J.P, Kirby, J. & Jarman, R.F (1975). Simultaneous and Successive synthesis: An alternative model for cognitive abilities. Psychological Bulletin 82, 87 - 103.
- Das, J.P. & Naglieri, J.A. (2002). Planning, attention, simultaneous and successive cognitive process as a model for assessment. School psychology Review 19: 423 - 442.
- Davis, G.B. (1999). Motivating Students NJ: Tools for teaching.
- Davis, H.A. (2003). Conceptualising the role and influence of Teacher student relationship on children's social and cognitive development. Educational psychologist. 38 (4). 207 - 234.
- Devaki, V. & Mary Lily Pushpam, A. (2011). Metacognitive Ability and Academic Achievement in Chemistry Among XI Standard. Edutraks, 11 (4).
- Dweck, C. S. & Legget, E.L. (1988). A social cognitive approach to motivation and personality, Psychological Review, 95, 256 - 273.
- Dweck, C. S., and Harold, R.D (1996) A Social-cognitive Approach to Motivation and
- Dweck.C. (2007). Using psychology mental imagery and suggestion. Brain

waves standard University.

14. Eammon, M.K. (2005). Socio-demographic school neighbourhood and parenting influences on Academic achievement of latino young Adolescents. *Journal of Youth and Adolescence* 34(2), 163-175..
15. Eamon, M.K. (2005). Socio-demographic school neighbourhood and parenting influences on academic achievement of latino young adolescents. *Journal of Youth and adolescence*. 34(2) 163-175.
16. Eccles, J.S. (1983). Expectancies, Value and academic behaviours in J.T. Spence (ed.). *Achievement and achievement motives* (pp. 75 – 146). San Francisco, CA: Freeman
17. Eccles, J.S. (1996). Family involvement in children's and adolescents, schooling in Booth, A Dunn, J.F. editor. *Family school links: How do they affect educational outcomes?* Mahwah, NJ: Erlbaum, pp.3-34.
18. Eccles, J.S. Wigfield, A & Schiefele, U. (1998). *Motivation*. In N.Eisenberg (ed.). *Handbook of child psychology* vol. 35th ed. pp.1017 – 1095). New York: Wiley.
19. Eccles, J.S. (1993). School and family effects on the on antogony of children's interest, self perceptions, and activity choices. In J. E. Jacobs (ed.). *Developmental perspective on Motivation* (PP 145-208). Lincoln NE:
20. Edward, J. (1995). Teaching thinking in schools: An overview. *Unicorn*, Vol 21 (1) 27 – 47.
21. Edwards, A & Warin, J. (1999). Parental involvement raising the achievement of primary school pupils: Why boher? *Oxford Review of Education*, 25, 325-341.
22. Edwards, A.L. (1957). *Techniques of attitude scale construction* New York: Apletoncent.
23. Edwards, A.L. (1957). *Techniques of attitude scale construction*. New York: Apletoncent.
24. Ekstron, R.B, Goertyz, M.E., Pollack, J.M & Rock, D.A (1986). Who drops out of school and why? Findings from a National study. *Teachers College Record* 87, 356 – 373.
25. Elder, G.H. Gaspi, A (1988). Economic Stress in our lives: Developmental Perspective *Journal of Social issues* 44, 25 – 45.
26. Elliot, A.J. McGregor, H.A, Gable, S. (1999). Achievement goals, study strategies and ex performance; A mediational analysis. *Journal of Educational Psychology*, 9, 549-563.
27. Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of personality and social psychology*, 72(1), 218.
28. Elliot, A.J. & Harackiewicz, J.M. (1996). Approach and Avoidance Achievement goals and intrinsic motivation: A Mediational analysis. *Journal of personality and social psychology* 70, 461 – 475.
29. Fraser, B.J & Fisher, D.L. (1982). Effects of classroom psychosocial environment on students learning. *British Journal of Educational Psychology* 52: 374 – 377.
30. Fraser, B.J & Fisher, D.L. (1992). Predicting students outcome from their perceptions of classroom psychosocial environment. *American Educational research Journal* 19: 498 – 518.
31. Fraser, B.J. (1991). Classroom environment instruments: development validity and applications. *Learning environment research*, 1, 7-33.
32. Gardner, H. (1993). *Multiple Intelligences: The Theory in Practice*, NY: Basic books.
33. Grade Point Averages of College Students with Learning Disabilities. *Journal of Learning Disability*, 36, 5, 407-15.
34. Gupta, M. (1993). *Determinants of Academic achievements*. New Delhi: Intellectual Publishing House.
35. Higgins, D. M., Peterson, J. B., Pihl, R. O., & Lee, A. G. (2007). Prefrontal cognitive ability, intelligence, Big five personality, and the prediction of advanced academic and work place performance. *Journal of Personality and social psychology* 93(2). 298 – 319.
36. Horn, J.L. (1989) *Cognitive Diversity: A Framework for Learning*. *Advances in Theory and Research*, New York: W.H. Freeman and Co. 61-116
37. Lau, K. Lee, J. (2008). Examining Hong Kong Students achievement goals and their relations with students perceived classroom environment and strategy use. *Educational Psychology* 28: 357 – 372.
38. Leeson, Peter, Joseph Ciarrochi and Peatrick C. L. Heaven (2008) *Cognitive Ability, Personality and Academic Performance in Adolescence*. *Personality and Individual Differences*, 45, 63.
39. Major, Banks, K. (1998). Families, Schools and children's learning, a study of children's learning environments. *International Journal of Educational Research* 21, 439-555.
40. Mehta, P & Kumar, D (1985). Relationship of Academic achievement with intelligence, Personality, Adjustment, Study habits and academic motivation. *Journal of Personality and clinical studies*, 1 57-68
41. Nanda HK, Marwaha S, "Suggestive case study on evidence of effectiveness of customized education training based on the outcomes of cognitive ability testing to develop high mental (cognitive) abilities & personality in students between 14-20 year age group to achieve maximum Employability" *International Journal of Applied Research* 2015; 1(4): 47-54.
42. Nanda HK, Marwaha S, Chawla P "Development, Item Analysis, Standardization, Review and Expansion of the Cognitive Ability Test for a Wider Age Range (7-16 Years) on a Single Test" *International Journal of Multidisciplinary Research and Development* 2015, 334-350
43. Performance Behavior. *International Journal of Educational Research*, 3, 1, 105- 113.
44. Pintrich P.R & Schrauben, B (1992). Students motivational beliefs and their cognitive engagement in classroom academic tasks. In J.Mecce (eds.). *Students percep-*
- tions in classroom, causes and consequences (pp 149-183). Hills dale NJ: Erlbaum.
45. Prawat & Richard, S. (1985). Affective Versus Cognitive Goal Orientations in Elementary Teachers. *American Educational Research Journal*, 22 (4), 587-604.
46. Randeep Pannu, (2013). Academic Achievement in Relation to Cognitive Styles, Location and Gender of Adolescent Students. *Edu. Track*, 12 (5), 36-37.
47. Vygotsky, J.L (1978). *Learning and Intelligence*. *Personality and individual differences* 27, 715-735.
48. Wagner, B. M., & Phillips, D. A. (1992). Beyond beliefs: Parent and child behaviors and children's perceived academic competence. *Child development*, 63(6), 1380-1391.